

of things; and of not the least importance, his unconsciously expressed views when he begins to write about things that interest him. Moreover, the idea of starting this little sheet is a good one, for it gives the lonesome tuberculous who is trying to get well and to find things to think about and to do—something of interest to engage his time. The very first number fired some hot shot that started a lot of things in a tuberculosis institution in San Francisco—and with good results. The subscription price is fifty cents a year; address, The Tea Bee, Colfax, Calif.

A PHYSICIANS' TELEPHONE EXCHANGE.

In the *Journal A. M. A.* for April 12, there is an editorial with the above title which begins with this sentence: "In some respects, Europe is a little ahead of us." This is said in connection with a few words descriptive of physicians' telephone exchanges in Vienna and Berlin and possibly elsewhere. There has been one such exchange in San Francisco for a number of months and we understand that one has been started in Los Angeles and another is to be started in Oakland. It is difficult to see how one could get along without such an exchange, after he has once become acquainted with it. No one can tell everybody he knows or every one who may possibly want to telephone to him, just where he is going to be from time to time; but he *can* let the exchange know and he can tell people to locate him through the exchange. That is the whole idea; to have one place where some one will be on hand, night and day, every minute of the time, to keep track of your whereabouts and get you in touch with any one who wants you. For emergency purposes, too, it should prove to be of the greatest value. A doctor is wanted in a hurry at a certain location. The operator of the exchange is notified and then goes through the list till a physician is found who is available and thus a lot of time, which may mean a life, is saved. And the work can be done at a very moderate expense.

WASSERMANN REACTIONS.

In a recent issue of the *JOURNAL* was an editorial bearing upon differences of Wassermann reports from various laboratories. This protest is well taken and it is admitted that discrepancies in laboratory reports on complement fixation properties of serums are too frequent to be overlooked. There are, however, a number of factors that tend to withhold the reaction from a position of precision. Most of these sources of error are controllable. On the other hand, the reaction when properly performed, stands to-day as one of the most interesting and valuable methods of laboratory investigations. To be sure, it is a relative pathological test, quantitatively specific. It depends for its results upon the assay of an indefinite body, measured by an accidentally applied and misunderstood phenomenon. Nevertheless, so absolute has been the conformity of end reactions in most similar instances that we are warranted in accepting the manifestations of such phenomenon even

if its bio-chemical basis has not as yet been established. Rather than indulge in verbose argument, I shall confine my impressions of the reaction from the standpoint of the laboratorian, in frank statements.

The Wassermann reaction is a mechanical procedure, finally interpreted through visual manifestations. So well is mechanical error checked by controls, that only through self-deception can this error be committed. A considerable variation of technical application exists with different workers. These are unfortunately all termed "Wassermann Reactions." On the other hand, certain selections of factors are arbitrary, providing that the principle of the original technic be adhered to. But when applied, the method, or name of modifier should be mentioned.

The only permissible modification of the Wassermann reaction, and this has enhanced the value of the test, is in the selection of antigen. The first antigen suggested was a watery extract of syphilitic liver. Then alcoholic extracts of healthy organs were demonstrated as being of equal or greater potency. Then lipoids extracted from normal and luetic organs have been proven to be even more efficacious. The latter has established itself with all workers. On the other hand, antigen, regardless of its character, must conform with strict and definite requirements. The titre of its complement binding unit must be established with a number of specific serums and multiple units must be proven not to be anti-complementary with normal serums. These facts must be re-established with every test.

An inherent error with the Wassermann reaction is the possibility of several units of anti-sheep hemolysins being natively present in some serums. The work of Muir and Noguchi has shown that multiple units of amboceptor have the power of dissociating complement when but loosely bound by few anti-bodies. A reaction that should be positive gives a negative reading. Bauer attempted to modify the Wassermann by utilizing these hemolysins instead of those artificially created by rabbit injections. As most serums contain no hemolysins such a modification by itself is obviously useless. It stands, though, as an admirable control and no Wassermann "set up" should be considered complete without tubes according to Bauer's system. The fault that Noguchi found with the Wassermann system was with these anti-sheep hemolysins. His modification was the result, but with his elimination of this error he added another which oversensitized the test. The application of the Wassermann together with the Bauer system embraces all the virtues of the Noguchi method and eliminates its source of error.

A serum submitted to various laboratories employing the strict Wassermann technic, should report similar results without the slightest variance. Most Wassermann reactions are either frankly positive or frankly negative. A positive reaction is more specific for syphilis than is the Widal reaction for typhoid. The latter test has no prescribed conventions, and the laboratorian is left to his own fastidiousness. The test bears practically the same